



Xerox Docket No. D/A0086

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of

Ercan KURUOGLU et al.

On Appeal from Group: 2178

Application No.: 09/982,024

Examiner: C. PAULA

Filed: October 19, 2001

Docket No.: 110915

For: METHOD AND APPARATUS FOR GENERATING A SUMMARY FROM A DOCUMENT
IMAGE

APPEAL BRIEF TRANSMITTAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Attached hereto is our Brief on Appeal in the above-identified application.

The Commissioner is hereby authorized to charge Deposit Account No. 24-0037 in the amount of Five Hundred Dollars (\$500.00) in payment of the Brief fee under 37 C.F.R. 41.20(b)(2). In the event of any underpayment or overpayment, please debit or credit our Deposit Account No. 24-0037 as needed in order to effect proper filing of this Brief.

Respectfully submitted,

James A. Oliff
Registration No. 27,075

David R. Kemeny
Registration No. 57,241

JAO:DRK/kxs
Date: May 4, 2007

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

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BRIEF ON APPEAL

Appeal from Group 2178

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400
Attorneys for Appellant

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I. REAL PARTY IN INTEREST

The real party in interest for this appeal and the present application is Xerox Corporation, by way of an Assignment recorded in the U.S. Patent and Trademark Office beginning at Reel 012275, Frame 0344.

II. STATEMENT OF RELATED APPEALS AND INTERFERENCES

There are no prior or pending appeals, interferences or judicial proceedings, known to Appellants, Appellants' representative, or the Assignee, that may be related to, or which will directly affect or be directly affected by or have a bearing upon the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-20 are on appeal.

Claims 1-20 are pending.

No claims are allowed.

Claims 1-20 are rejected.

IV. STATUS OF AMENDMENTS

A Request for Reconsideration was filed on March 8, 2007 in reply to the Final Rejection mailed January 24, 2007. The Request for Reconsideration was considered by the Examiner, as evidenced by the Advisory Action mailed March 28, 2007.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The claims relate to apparatus and methods for generating a summary of a captured (e.g., scanned) image of a document on the basis of detected handwritten or electronic annotations made to the machine generated text of the document prior to scanning. The captured image is processed to detect annotations made to the original text of the document prior to image capture. The detected annotations can be used to identify features or text for use to summarize that document. The apparatus and methods capture an original image of a document. The apparatus and methods detect annotations made to the document prior to image capture. The annotations identify lesser portions of text to be extracted from machine generated text of the original image of the document. Importantly, the apparatus and methods determine the lesser portions of the text identified by the annotations to be extracted, and extract only the lesser portions of text from the machine generated text of the original image of the document, which are identified by the detected annotations. Further, the apparatus and methods generate a summary that includes only the extracted lesser portions of text from the machine generated text of the document. The summary is a condensed version of the machine generated text of the original image of the document and is generated as a separate electronic image document that is different from the original image.

Figs. 1 and 2 illustrate a general schematic block diagram and process for processing a paper document to generate a summary of the document encompassed by claims 1-6 and 8-13. Fig. 3 generally illustrates a page of a document with annotations made to the machine generated text of the original image encompassed by claims 1-6 and 8-13. Fig. 4 is an enlarged schematic view of a portion of Fig. 3 illustrating the extraction of a sentence that has been annotated encompassed by claims 1-6 and 8-13. Fig. 5 illustrates various options for displaying the summary encompassed by claims 7, 14-16, 19 and 20.

In particular, for example, referring to Fig. 3, various kinds of handwritten annotations are made to the machine generated text of the original image 12. These include underlining 32, circling 34, bracketing 36, margin bracketing or marking 38, cross-through 40, anchored arrows indicating place changes 42, and handwritten notes or insertions 44 (page 4, lines 14-17). Importantly, the text or other features indicated by the annotations are extracted and used to compile the summary of areas of interest identified by the hand annotations (page 4, lines 3-6; page 5, lines 4-7). For example, as shown in Fig. 4, the extracted feature for an annotation is preferably expanded to include additional contextual information or text for that annotation. That is, the feature may be expanded to include the sentence 50 around the annotation (page 5, lines 10-16). The summary is compiled from the extracted features, for example, in the form of image maps of the extracted features (page 5, lines 21-24). The summary therefore reflects the areas of interest identified by the hand annotations in the paper document.

As shown, for example, in Fig. 2, the process encompassed by the claims includes a first step 30 of identifying the annotations made by the user in the captured digital image (page 4, lines 7-9). At step 46, interpretation of the annotations is carried out (page 4, lines 18-20). At step 48, the machine generated text in regions of the digital image identified by the interpreted annotations are extracted (page 5, lines 4-9). At step 52, the summary is compiled from the extracted features (page 5, lines 21-24). At step 56, the compiled summary is output, for example, on a user's display or it is printed (page 6, lines 11 and 12).

As illustrated in Fig. 5, for example, the apparatus and methods can provide a plurality of layered detail levels in a window 57 for the summary. For example, the lowest detail level 58 merely includes any subject headings extracted from the document. By clicking on any subject heading, the subject heading is expanded to a second detail level 60 to generate the text summary of that appropriate section of the document. The second detail level 60 only

includes text features. However, by clicking again, the summary is expanded (a third detail level 62) to include non-text features as part of the summary, such as annotated figures from that section of the document. By clicking on any sentence, the summary is again expanded (a fourth detail level 64) to display further context for the sentence, for example, by displaying the paragraph containing the sentence. In a final layer (a fifth detail level 66), the annotation associated with any sentence in the document may be “retrieved” by clicking on the sentence.

VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

The following grounds of rejection are presented for review:

- (1) Claims 1-6, 8-13, 17 and 18 are rejected under 35 U.S.C. §103(a) over Manly, U.S. Patent No. 3,714,636, in view of Ma et al. (Ma), U.S. Patent No. 6,909,805.
- (2) Claims 7, 15 and 16 are rejected under 35 U.S.C. §103(a) over Manly in view of Bornstein et al. (Bornstein), U.S. Patent No. 5,867,164.
- (3) Claim 14 is rejected under 35 U.S.C. §103(a) over Manly in view of Kupiec, U.S. Patent No. 6,533,822.
- (4) Claims 19 and 20 are rejected under 35 U.S.C. §103(a) over Manly in view of Lerner et al. (Lerner), U.S. Patent No. 6,859,909.

VII. ARGUMENT

The Final Rejection fails to establish a *prima facie* case of obviousness with respect to the current rejection of pending claims 1-6, 8-13, 17 and 18. In particular, the Final Rejection fails to (a) apply prior art references that teach or suggest all of the claim limitations of at least independent claims 1 and 8; and (b) provide suggestion or motivation, either in the references themselves or in the knowledge generally available to the skilled artisan, to modify the reference or to combine reference teachings. Further, the rejections of claims 7, 14-16, 19 and 20 are legally defective because, due to the fact that these claims depend from claim 1 or claim 8, the Patent Office cannot reject these claims without using at least the references that were used to reject claims 1 and 8.

A. Requirements for a Prima Facie Case of Obviousness under 35 U.S.C. §103(a)

In order to establish a *prima facie* case of obviousness, three criteria must be met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to the skilled artisan, to modify the reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art must teach or suggest all of the claim limitations (*In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991); see MPEP §2142, §2143). The criteria must be supported in the prior art, and not based on Appellants' disclosure.

B. The Final Rejection fails to apply prior art references that teach or suggest all of the claim limitations of at least the independent claims

Appellants respectfully submit that the Final Rejection fails to satisfy at least the third criteria for a *prima facie* case of obviousness. Specifically, and as required by MPEP §2143.03, the Final Rejection has failed to apply prior art references that teach or suggest all of the claim limitations of at least independent claims 1 and 8 (see *In re Royka*, 490 F.2d 981 (CCPA 1974)). Moreover, the Office Action fails to allege that any features missing from the

references would have been generally known in the art. MPEP §2143.03 states that all words in a claim must be considered in judging the patentability of the claim against the prior art (see *In re Wilson*, 424 F.2d 1382 (CCPA 1970)). Here, although the Final Rejection alleges that the combination of Manly and Ma suggests all of the claim features recited in independent claims 1 and 8, the Final Rejection does not establish that all claimed features are present in the references.

First, with respect to Manly, Appellants respectfully submit that, contrary to the Final Rejection's assertion, Manly fails to disclose or suggest extracting only the lesser portions of text from the machine generated text identified by detected annotations, and generating a summary including only the extracted lesser portions of text from the machine generated text of the document, as recited in independent claims 1 and 8. Manly discloses a manually operated typewriter that generates machine readable text on an original document (col. 1, lines 13-22). An author that proofreads the original document makes editing marks directly on the original document with a special pen (col. 1, lines 23-28). The editing marks of the special pen designate text of the original document to be deleted or removed (col. 1, lines 32-41), and instruct a machine to delete or remove the designated text (col. 1, lines 28-41). That is, the editing marks of the special pen instruct the machine to extract unwanted or undesirable portions of text from the original document. The deleted or removed (i.e., unwanted or undesirable) text is discarded and not included in the author's final draft. The extracted, deleted text is not included in any subsequently generated summary, as is the case in claims 1 and 8. Moreover, to include the extracted Manly text in a summary would be contrary to the teachings of Manly.

Claims 1 and 8 recite extracting portions of text identified by detected annotations to be included in a summary, while Manly teaches extracting portions of text identified by detected annotations to be discarded. The Examiner acknowledges in the Advisory Action

that Manly teaches extracting only unwanted or undesirable portions of text from the original document, and that the extracted text is discarded so as not to be included in the author's final draft. However, the Examiner asserts in the Advisory Action that by indicating with the special pen portions of text to be extracted and discarded, the author would necessarily be at the same time designating text of the draft that would be included in the final draft. The Examiner further asserts that the final draft corresponds to the claimed generated summary.

However, as clearly recited in claims 1 and 8, the claimed generated summary only includes those portions of the text from the machine generated text that are extracted because they are identified by detected annotations. Accordingly, any portions of the text in Manly not designated by the special pen are irrelevant to the affirmatively claimed features of this application. The not-designated portions of Manly are not extracted. The not-designated portions constitute the final document, which is the antithesis of a summary of a document. The combinations of features recited in claims 1 and 8 allow a user to affirmatively annotate important or relevant (e.g., desired) sections of text of an original document image to be subsequently compiled in a summary of the original document. Manly does not disclose these features or even the same concepts or goals obtained by the claimed features.

Manly discloses edit signals that instruct a machine to insert material that is separately generated by the original typewriter (col. 1, lines 47-50). However, the insert material ("insert record") is additional material that is "separately generated" (col. 1, lines 54-61) by the original typewriter to be inserted in the final record. Thus, the inserted, additional material is not designated by the editing marks of the special pen, and does not designate lesser portions of the text to be extracted. Moreover, the "insert record" is included in the final document, and is not a summary of the document. Thus, Manly's insert material also does not correspond to the claimed extracted lesser portions.

Thus, Manly fails to disclose or suggest extracting only lesser portions of text from the machine generated text identified by detected annotations, and generating a summary including only the extracted lesser portions of text from the machine generated text of the document, as recited in independent claims 1 and 8.

Second, and as acknowledged in the Final Rejection, Manly fails to disclose generating a summary that is a condensed version of the machine generated text of the original image of the document, the summary being generated as a separate electronic image document that is different from the original image, as recited in independent claims 1 and 8. The Office Action alleges that Ma discloses these features.

Ma teaches that after extraction from the document image, all the printed text lines 52 may be saved into a memory (col. 7, lines 52-61). Ma does not disclose or suggest that the memory only includes the extracted lesser portions of text from the machine generated text of the document, or that the information stored in the memory is a condensed version of the machine generated text of the original image of the document. Instead, the entire original image of the document is saved into a memory (col. 7, lines 52-61). Accordingly, Ma is unable to allow only important or relevant sections of the original document image designated by handwritten annotations to be compiled as a summary of the original image of the document, which is a benefit of the combinations of features recited in claims 1 and 8.

Further, Ma teaches that the printed text lines 52 may be saved into a memory (col. 7, lines 52-61). Ma does not teach that the printed text lines 52 are subsequently output to form a separate electronic image document. Moreover, because all the printed text lines 52 (the entire original image of the document) are saved into a memory, as discussed above, Ma also fails to teach that any separate electronic image document would be different from the original image. Therefore, Ma fails to disclose or suggest a summary generated as a separate

electronic image document that is different from the original image, as recited in claims 1 and 8. Further, Ma fails to disclose generating a summary that is a condensed version of the machine generated text of the original image of the document, the summary being generated as a separate electronic image document that is different from the original image, as recited in independent claims 1 and 8. Thus, the combination of Manly and Ma fails to suggest all of the claim features recited in independent claims 1 and 8. Accordingly, the rejection is improper. Appellants respectfully request withdrawal of the rejection.

According to MPEP §2143.03, if an independent claim is non-obvious under 35 U.S.C. §103(a), then any claim depending therefrom is non-obvious (*In re Fine*, 837 F.2d 1071, (Fed. Cir. 1988)). Thus, withdrawal of the rejections of the remaining, dependent claims also is respectfully requested.

C. The Final Rejection fails to provide suggestion or motivation, either in the references themselves or in the knowledge generally available to the skilled artisan, to modify the reference or to combine reference teachings

Appellants respectfully submit that the Final Rejection fails to satisfy the first criteria for a *prima facie* case of obviousness. Specifically, and as required by, MPEP §2143.01(V) and MPEP §2143.01(VI), the Final Rejection has failed to provide suggestion or motivation, either in the references themselves or in the knowledge generally available to the skilled artisan, to modify the reference or to combine reference teachings. MPEP §2143.01(V) states that if the proposed modification of a reference would render the invention being modified unsatisfactory for its intended purpose, there is no suggestion or motivation to make the proposed modification (*In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984)). MPEP §2143.01(VI) states that if the proposed modification of combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious (*In re Ratti*, 270 F.2d 810 (CCPA 1959)).

The Final Rejection asserts that it would have been obvious to one skilled in the art to modify the system and method of Manly by the alleged teachings of Ma to result in the combination of features recited in independent claims 1 and 8. However, Appellants respectfully submit that such a modification of the method of Manly would render the system and method of Manly unsuitable for their intended purpose as well as change Manly's principle of operation.

As discussed above, Manly teaches proofreading an original document by making editing marks that designate unwanted or undesirable text of the original document to be deleted or removed. The deleted text is discarded and not included in the author's final draft while the undeleted text is the author's final draft. On the other hand, as discussed above, Ma teaches eliminating all the printed text lines from the scanned document image, irrespective of the location of handwritten annotations (see Fig. 1, steps 24 and 26; col. 3, line 67 to col. 4, line 5; col. 5, lines 64-66; col. 7, lines 53-61; Figs. 7 and 8). The Final Rejection's proposed modification of a Manly would render the system and method of Manly unsatisfactory for its intended purpose because Manly's proofreading process seeks to extract only unwanted or undesirable text and maintain the desired text as a final draft, but Ma eliminates all the printed text lines. Further, the proposed modification of Manly with the teachings of Ma changes the principle of operation of the Manly's system and method because extracting all the printed text from the scanned document image defeats the purpose of proofreading a document to eliminate only undesirable text of a draft.

Both the Final Rejection and the Advisory Action allege that the motivation to combine would be to increase "the flexibility of having multiple formats, and efficient separation of document data" (see Ma, col. 2, lines 30-37). However, the Final Rejection has not cited any evidence or support in either Ma or Manly that explains, discusses or suggests how the process of eliminating all the printed text lines from the scanned document image,

irrespective of the location of handwritten annotations, as taught by Ma, would make the proofreading process of Manly, in which only the undesirable text from the original document is deleted or removed, more efficient. Moreover, the additional "format" disclosed by Ma is not applicable to the proofreading process of Manly because, as discussed above, extracting all the printed text from the scanned document image defeats the purpose of proofreading.

Although the Final Rejection concocts an alleged benefit of incorporating the process of Ma into the proofreading procedure of Manly, there is no evidence or support that explains, discusses or suggests how the two methods would be combined without defeating the disclosed purpose of Manly. Thus, the Examiner has provided no viable evidence to support the conclusion that one skilled in the art would have been motivated to combine Manly and Ma. Instead, the Office Action relies on impermissible hindsight using knowledge gleaned only from Appellants' disclosure (see MPEP §2145(X)(A)).

Because, the modification of Manly proposed by the Final Rejection would render the system and method of Manly unsuitable for its intended purpose and/or the Final Rejection's proposed modification of the system and method of Manly would change the principle of operation of Manly, there can be no motivation for such a modification (MPEP §§ 2143.01(V) and 2143.01(VI)). Because there is no motivation to modify Manly, the Final Rejection has failed to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a). Accordingly, the rejection is improper. Appellants respectfully request withdrawal of the rejection.

D. The rejections of claims 7, 14-16, 19 and 20 are legally defective

The rejections of claims 7, 14-16, 19 and 20 are legally defective because the Final Rejection rejects these claims without using all the references that were used to reject independent claims 1 and 8. Specifically, none of the rejections of claims 7, 14-16, 19 and 20

rely on Ma (combined with Manly). Thus, the rejections of claims 7, 14-16, 19 and 20 are legally defective. Accordingly, withdrawal of the rejections is respectfully requested.

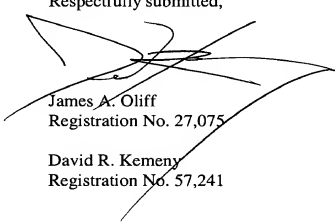
E. Conclusion

Because the Final Rejection fails to apply prior art references that teach or suggest all of the claim limitations of at least independent claims 1 and 8, and because there is no motivation to modify Manly as proposed by the Final Rejection, the Final Rejection has failed to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a). Accordingly, the rejections of claims 1-20 are improper.

VIII. CONCLUSION

For at least the reasons discussed above, it is respectfully submitted that the rejections are in error and that claims 1-20 are in condition for allowance. For at least the above reasons, Appellants respectfully request this Honorable Board to reverse the rejections of claims 1-20.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

David R. Kemeny
Registration No. 57,241

JAO:DRK/kxs

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

Filed: May 4, 2007

APPENDIX A - CLAIMS APPENDIX

CLAIMS INVOLVED IN THE APPEAL:

1. An apparatus for generating a summary of a document, comprising:
an image capture device for capturing an original image of a document;
a processing device for detecting annotations made to the document prior to image capture, the annotations identifying lesser portions of text to be extracted from machine generated text of the original image of the document, the processing device determining the lesser portions of text of the document identified by the annotations to be extracted, and extracting only the lesser portions of text from the machine generated text from the original image of the document identified by the detected annotations; and
a summary generator for generating a summary including only the extracted lesser portions of text from the machine generated text of the document, the summary being a condensed version of the machine generated text of the original image of the document and being generated as a separate electronic image document that is different from the original image.
2. The apparatus according to claim 1, wherein the summary generator is operative to generate a summary of the same document as that on which the annotations are detected.
3. The apparatus according to claim 1, wherein the summary generator is operative to generate a summary of a different document as that on which the annotations are detected.
4. The apparatus according to claim 3, wherein the image capture device is operative to capture an image of a second document to be summarized based on the detected annotations from a first document.

5. The apparatus according to claim 1, wherein the processing device is operative to identify an image region associated with a detected annotation.

6. The apparatus according to claim 5, wherein the image region represents a sentence in the document image to provide context for the identified annotation.

7. The apparatus according to claim 1, wherein the summary generator is operative to generate a summary comprising hidden portions, each portion selectively expandable to increase the information in that portion of the summary.

8. A method of generating a summary of a document, comprising:
capturing an original image of a document;
detecting annotations made to the document prior to image capture, the annotations identifying lesser portions of text to be extracted from machine generated text of the original image of the document;

determining the lesser portions of text of the document identified by the annotations to be extracted;

extracting only the lesser portions of text from the machine generated text from the original image of the document identified in the determining step; and

generating a summary including only the lesser extracted portions of text from the machine generated text of the document, the summary being a condensed version of the machine generated text of the original image of the document and being generated as a separate electronic image document that is different from the original image.

9. A method according to claim 8, wherein the document summarized is same document as that on which the annotations are detected.

10. A method according to claim 8, wherein the document summarized is a different document from that on which the annotations are detected.

11. A method according to claim 10, further comprising capturing an image of a second document to be summarized based on the detected annotations from the first document.
12. A method according to claim 8, wherein said detection comprises identifying an image region associated with a detected annotation.
13. A method according to claim 12, wherein the image region represents a sentence in the document image to provide context for the identified annotation.
14. A method according to claim 8, further comprising generating a summary comprising hidden portions, each portion selectively expandable to increase the information in that portion of the summary.
15. The apparatus according to claim 1, wherein the summary includes expandable detail levels.
16. The method according to claim 8, wherein generating the summary includes providing the summary in expandable detail levels.
17. The apparatus according to claim 1, wherein the summary includes extracted image maps of the original image of the document.
18. The method according to claim 8, wherein generating the summary includes extracting image maps of the original image of the document.
19. The apparatus according to claim 1, wherein the summary includes at least one of a pointer and address indicating a place in the original image of the document from which the extracted portions are extracted.
20. The method according to claim 8, wherein generating the summary includes providing at least one of a pointer and address indicating a place in the original image of the document from which the extracted portions are extracted.

APPENDIX B - EVIDENCE APPENDIX

NONE

APPENDIX C - RELATED PROCEEDINGS APPENDIX

NONE